



Distinguished LECTURE SERIES

Dynamic Loading of Materials and Structures

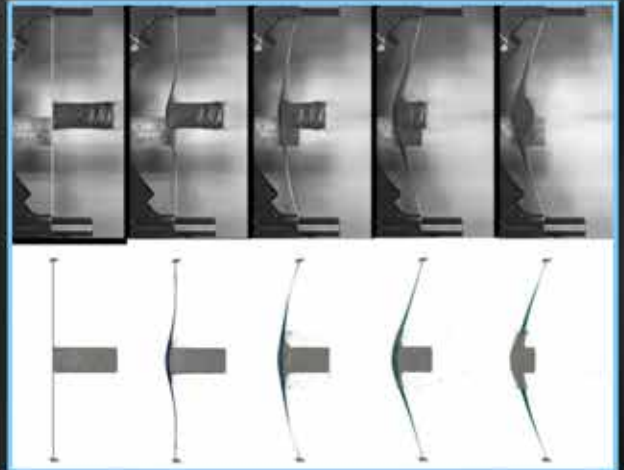
Presented by:

Dr. Vikram Deshpande

Professor of Materials Engineering at the University of Cambridge



APRIL 24
2018
11 a.m.
IN THE JUNKER CENTER



Office of Naval Research
875 N. Randolph St., Arlington, Virginia
Bobby Junker Executive Conference Center, 14th Floor

Dynamic Loading of Materials and Structures

Dr. Deshpande will provide an overview of his current research pursuits in mechanics & materials focusing on the following topics:

- (i) Mechanics of composites, especially 3D composites and composites made from of ultra-high molecular weight polyethylene fibres;
- (ii) Ceramics and cermets;
- (iii) Micro-architected materials; and
- (iv) Discrete dislocation modelling of the creep of Ni superalloys.

The bulk of the seminar will focus on dynamic

loading of structures and micro-architected materials. One specific illustration will include a fundamental investigation of the fluid/structure interaction when high velocity granular media impacts these types of novel structural material systems.

Insights from this type of fundamental work can be used to understand structural response to underbody blast and other high rate phenomena. And it can illustrate how fundamental material science and structural mechanics can be employed to enable, relatively inexpensively, the design of novel mitigation approaches.

ABOUT Dr. Vikram Deshpande

Dr. Vikram Deshpande is a Professor of Materials Engineering at the University of Cambridge. He joined the faculty of Engineering at the University of Cambridge as a lecturer in October 2001 and was promoted to a professorship in Materials Engineering in 2010. He was a tenured Associate Professor at the University of California, Santa Barbara (UCSB) in 2007-2008. Dr Deshpande also currently holds a Visiting Professorship at Eindhoven University Mechanical Engineering Department, The Netherlands.

Dr. Deshpande has a wide range of interest in Mechanics of Materials and has made important contributions in:

- (i) Discrete dislocation plasticity modelling of metal plasticity
- (ii) Development of robust constitutive laws that have been widely adopted by the international scientific community. of engineering materials - from foams to ceramics

- (iii) Invented new micro-architectures of lattice materials for diverse applications including large scale lightweight structures, energy absorption and shock mitigation.
- (iv) Pioneered a broad range of experimental techniques to interrogate material and structural behaviour under dynamic loadings (e.g. water shock tube, foam projectile based simulator of blast loading and high velocity sand slugs).

Dr. Deshpande has published in excess of 220 peer reviewed journal articles in both experimental and theoretical solid mechanics with an h-index of 60. He serves on the editorial boards of several mechanics and biomechanics journals including the Journal of the Mechanics and Physics of Solids, Molecular and Cellular Biomechanics, Modelling and Simulation in Materials Science and Engineering, International Journal of Impact Engineering and the Proceedings of the Royal Society A.